inapplicable.[1407] Allowing incumbent LECs to recover the forward-looking costs of providing access to OSS solely from competitive LECs is consistent with the approach followed by a number of state commissions and approved in two federal district court decisions.[1408]

544. We acknowledge AT&T/WorldCom's general concerns that allowing incumbent LECs to recover OSS costs from competitive LECs creates an incentive for inefficient deployment of OSS.[1409] We do not think that such concern is warranted in this case, however. The costs Verizon has identified in this proceeding were incurred before Verizon could be sure that it would be allowed to recover those costs. The uncertainty of recovery suggests that Verizon had an incentive to spend its money efficiently. Moreover, Verizon is correct that competitive LECs have played an important role in the timing and substance of the OSS decisions made by Verizon, which further limits the likelihood that Verizon has deployed OSS inefficiently.

545. Although we have concerns about the validity of the ten-year forecast of competitive LEC demand that Verizon uses to calculate the OSS rate, we will allow it in this case. A forecast of competitive LEC demand over a shorter period of time would almost certainly be more reliable, but allowing Verizon to recover OSS costs over a shorter period would inflate the monthly charge paid by competitive LECs to a point that might constitute a barrier to entry. By spreading recovery over a ten-year period, Verizon appropriately limits the burden on competitive LECs created by this charge. Spreading the recovery of development costs over ten years also is consistent with Verizon's argument that new systems build on old systems, and that the benefit of development work extends beyond the period that a particular system is in use.[1410] Recovery over a shorter period might be more appropriate if the development costs were limited to those systems actually in use today.

546. Our decision to allow Verizon to recover OSS costs from competitive LECs is consistent with our decision elsewhere in this order to limit Verizon's ability to impose NRCs on competitive LECs. By limiting recovery for performing manual processes, but allowing recovery of costs associated with automating those processes, we provide Verizon the incentive to adopt automated systems for the activities necessary to turn up service to a competitive LEC. At the same time, we provide competitive LECs an incentive to consider the costs associated

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[1407] 47 U.S.C. § 251(e)(2).

[1408] *See Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F. Supp.2d 218, 248 (D. Del. 2000) ("Nothing on the face of the Act prohibits imposing an additional charge to compensate Bell for providing OSS access to its competitors."); *AT&T Communications of the South Central States, Inc. v. BellSouth Telecommunications, Inc.*, 20 F. Supp. 2d 1097, 1104-05 (E.D. Ky 1998) (upholding Kentucky Commission decision permitting BellSouth to recover OSS costs solely from competitive LECs); *Costing and Pricing of Unbundled Network Elements, Transport, and Termination*, Docket No. UT-003013, Thirteenth Supplemental Order (Washington Commission Jan. 31, 2001).

[1409] AT&T/WorldCom Initial Cost Brief at 196.

[1410] Verizon Ex. 122, at 235-36.

with any future improvements in OSS that they request. A contrary approach would have the effect of rewarding Verizon for maintaining manual processes even where it might otherwise be efficient to automate, while placing little constraint on competitive LEC demands for new systems.

VIII. DUF

A.   Positions of the Parties

547.   The DUF service provides resellers and some UNE purchasers with the intraLATA local and toll call usage record details of their end-users.[1411] Verizon proposes several DUF charges, the most significant of which is a charge of $.0015 per message for "Message Recording."[1412] Verizon provides information identifying the number of employees needed to provide the DUF and the costs associated with those employees, and it argues that its proposed charges are necessary to recover these costs.[1413]

548.   AT&T/WorldCom argue that there should be no separate charge for the DUF because Verizon has failed to demonstrate that these costs are not recovered through ACFs.[1414] If a charge is permitted, AT&T/WorldCom propose a Message Recording charge of $.00006 per message.[1415] AT&T/WorldCom argue that Verizon's proposed charge of $.0015 per message is substantially higher than the current price in Virginia ($.000246) and other states.[1416] AT&T/WorldCom state that the basis for the charge, $1.1 million for 15 support employees, is completely unsubstantiated and that Verizon does not explain what these people do.[1417] AT&T/WorldCom also challenge the demand assumptions that Verizon uses to convert costs to rates. According to AT&T/WorldCom, Verizon's estimate of initial demand is too low, and it grows that demand too slowly.[1418] Specifically, AT&T/WorldCom state that Verizon assumes a growth rate in DUF usage of just one percent, but in its OSS study it assumes that competitive LEC lines will grow at an annual rate of 24 percent.

549.   Verizon responds that the proposed price is higher than existing rates because the

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[1411] Verizon Ex. 107, at 239.

[1412] Verizon Ex. 140 (Errata to Cost Study), at 1; AT&T/WorldCom Ex. 12, at 167.

[1413] Verizon Ex. 122, at 209.

[1414] AT&T/WorldCom Ex. 12, at 168.

[1415] AT&T/WorldCom Reply Cost Brief, Attach. at 3.

[1416] AT&T/WorldCom Ex. 12, at 167. For example, assuming 200 messages per line per month, the charge would add $.30 to the monthly price of a loop. *Id.* at 167-68.

[1417] *Id.* at 168.

[1418] AT&T/WorldCom Initial Cost Brief at 199-200.

existing rates were calculated based on anticipated demand that was much greater than actual demand.[1419] Actual demand for the DUF service has been over 90 percent lower than anticipated, but the amount of labor required has been the same as anticipated. The demand estimates used in Verizon's DUF study are based on the expert opinion of the manager of the DUF service.[1420] Verizon states that the demand estimates differ from the estimates in its OSS study because not all competitive LECs need or use DUF.[1421] For example, DUF is not necessary for carriers that provide a service using their own switch, nor is it necessary if a carrier offers a flat-rated service. Verizon claims there is no double recovery of DUF costs because it removes the costs associated with revenue-producing computers from its ACF calculations, which has the effect of removing DUF costs from the ACFs.[1422]

B.   Discussion

550.   The issues presented in the arbitration are: (1) whether Verizon should be permitted to charge for providing a DUF, and (2) if so, what that charge should be. As to the first issue, we conclude that Verizon should be permitted to recover DUF costs through a separate charge. Although AT&T/WorldCom argue that Verizon did not demonstrate that these costs are not recovered through ACFs, AT&T/WorldCom witness Murray essentially conceded that they are not reflected in the ACFs used in the MSM.[1423] Because we are using the MSM to set recurring loop rates, and because we cannot find that the costs are recovered through the MSM, it is appropriate that Verizon recover them through a separate charge to those competitive LECs that use the DUF. With respect to Verizon's models, Verizon provided an explanation of why these costs are not otherwise recovered, and AT&T/WorldCom has not demonstrated that this explanation is incorrect.

551.   As to the second issue, the amount of the DUF charge, there are two components: cost and demand. With respect to cost, we will accept Verizon's estimate of DUF costs. AT&T/WorldCom have not demonstrated that Verizon's estimate is unreasonable. Verizon identifies the specific personnel involved in providing DUF, and AT&T/WorldCom have not demonstrated that the service can be provided more efficiently.

552.   With respect to demand, we decline to use the demand estimates from Verizon's DUF study, and instead we will use the demand estimates in Verizon's OSS study. We are not convinced by Verizon's argument that demand for DUF will grow at a lower rate than demand

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[1419] Verizon Ex. 122, at 208.

[1420] Tr. at 3987.

[1421] *Id.* at 3992-94.

[1422] Verizon Ex. 122, at 209-10.

[1423] Tr. at 3996-97 ("I think probably we do acknowledge that certain elements of the costs may need to be recovered through the restated Verizon cost study charges . . . we haven't proposed to zero it out, and we haven't put a number in there derived directly from the Synthesis Model.").

for competitive LEC lines generally. Furthermore, we are not convinced that the increased demand estimate requires us to increase the estimated total cost of providing DUF. Verizon acknowledges that a significant portion of the DUF costs are fixed in the sense that a certain number of employees are needed no matter how many customers take the service.[1424] Given the limited evidence provided by Verizon regarding the specific functions involved in providing the DUF, we are not able to identify any types of costs that should increase if we use a different estimate of demand.

IX. MISCELLANEOUS UNES

A. Positions of the Parties

553. Verizon proposes cost studies and rates for subloops, the NID, enhanced extended link testing, entrance facilities, dark fiber transport, dark fiber loops, customized routing, and service management systems (SMS).[1425] AT&T/WorldCom do not submit affirmative cost studies for these UNEs, but rather propose restating the rates generated by the Verizon cost studies.[1426]

B. Discussion

554. We adopt the Verizon cost studies to generate rates for these UNEs, subject only to the changes that we require elsewhere in this order for cost of capital, depreciation, and ACFs. The Verizon cost studies are the only ones before us. Although AT&T/WorldCom propose restated rates for these UNEs, they do not identify clearly in their briefs, written testimony, or live hearing testimony the changes that they propose to apply to the Verizon studies. Indeed, with two narrow exceptions, AT&T/WorldCom fail to discuss any of these UNEs at all in their post-hearing briefs.[1427] AT&T/WorldCom similarly do not discuss their restatements of these UNEs in their written testimony.[1428] We were unable to verify the changes that AT&T/WorldCom

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[1424] Tr. at 3997-98 ("it's not a linear relationship . . . There are a lot of fixed non-volume-sensitive costs").

[1425] *See* Verizon Ex. 100P, Vols. IV, VII, Parts B-8 (Subloop Distribution – 2 Wire, Subloop Distribution – 4 Wire, Subloop Feeder – DS-1), B-9 (Subloop Feeder – DS-3), B-11 and B-12 (NID), B-14 (Enhanced Extended Link Testing), D-1 (Entrance Facilities), F-1 (Dark Fiber – IOF and loops), F-2 (Customized Routing), and F-4 (SMS) (confidential version); Verizon Ex. 180, Tab D (Revised Proposed Summary of Costs); *see also* Verizon Ex. 107, at 80-82.

[1426] *See* AT&T/WorldCom Ex. 12, at 95-96; *see also* AT&T/WorldCom Ex. 14, at 31-32.

[1427] There are three mentions of the term "dark fiber" in the fiber feeder fill factor section, and a single mention of the term "entrance facilities" in the interoffice transport section, of the AT&T/WorldCom Initial Cost Brief. AT&T/WorldCom Initial Cost Brief at 161, 191 n.163.

[1428] The AT&T/WorldCom Recurring Cost Panel Rebuttal Testimony contains only a single paragraph that mentions "other UNEs," which states that their restatements are contained generally in their workpapers. AT&T/WorldCom Ex. 12, at 95-96.

claim to have made to the Verizon cost studies in their workpapers, other than the master inputs (*i.e.*, cost of capital, depreciation, ACFs), which we analyze elsewhere in this order.[1429] As we stated previously, we are required to resolve only those issues that are clearly presented to us.[1430] Because AT&T/WorldCom fail to identify clearly the changes that they propose making to the Verizon cost studies for these UNEs, apart from the master inputs, we need not address the proposed restatements. Therefore, we adopt the Verizon proposed cost studies and rates for these UNEs, subject to the requirement that Verizon adjust them to conform to our decisions on master input issues (*i.e.*, cost of capital, depreciation, ACFs).[1431]

X. NON-RECURRING CHARGES

A. Background

555. Non-recurring costs may be thought of as the "installation" or "set-up" costs an incumbent LEC incurs processing and provisioning a competitive LEC order for a UNE. NRCs constitute an upfront cost to the competitive LEC that is generally not recoverable if it subsequently loses the end-user customer served with the UNE. Consequently, as the Commission recognized in the *Local Competition First Report and Order*, NRCs can be a serious barrier to entry, especially if they are unduly high.[1432] The Commission concluded that, as a general rule, rates for UNEs should recover costs in the manner in which they are incurred.[1433] The Commission also required that recurring costs be recovered through recurring charges, rather than through a NRC.[1434] The Commission gave discretion to state commissions, however, to require incumbent LECs to recover non-recurring costs through recurring charges over a reasonable period of time. The Commission found that recovery of non-recurring costs through recurring charges was a "common practice" that "fully compensated" the incumbent LECs for their non-recurring costs.[1435]

556. The non-recurring costs at issue in this case primarily are labor costs; both sides agree that other network costs should be recovered through recurring charges. The parties disagree profoundly as to almost every aspect of the calculation of these labor costs, including the characteristics of the "forward-looking" network, its degree of automation, and the actual procedures the incumbent LEC should be assumed to follow in setting up a UNE, and thus as to

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[1429] *See supra* sections III(C)-(E).

[1430] *See supra* section II(C).

[1431] *See supra* sections III(C)-(E).

[1432] *Local Competition First Report and Order*, 11 FCC Rcd at 15875, para. 747.

[1433] *Id.* at 15874, para. 743.

[1434] *Id.* at 15874-75, para. 745.

[1435] *Id.* at 15875-76, para. 749.

the non-recurring (and recurring) costs incurred. In addition, they disagree sharply as to the manner in which these costs should be recovered, that is, whether through recurring or NRC.

B.   Non-Recurring Cost Models

1.   Positions of the Parties

557.   Both Verizon and AT&T/WorldCom provided studies intended to identify the costs to be recovered through NRCs.[1436] We will evaluate these studies in accordance with our TELRIC pricing rules and the standards for TELRIC cost models established by the Commission in the *Universal Service* proceeding.[1437]

a.   Verizon Model

558.   Verizon's non-recurring cost model "seeks to measure the non-recurring costs that Verizon VA truly expects to incur in the future as it efficiently expands and replaces its network over time."[1438] Verizon argues that the relevant network for the purpose of calculating NRCs is the actual network as Verizon expects it to exist at the end of the three-year planning period.[1439] As a result, Verizon's non-recurring cost study assumes a different forward-looking network than its recurring cost studies. Specifically, the non-recurring cost study assumes significantly less use of IDLC than the recurring cost study, although slightly more than in Verizon's current network.[1440] The model also assumes that all stand-alone UNE loops must be provisioned over copper or UDLC facilities.[1441] Verizon argues that this difference in network assumptions is necessary because network assumptions that depart significantly from the network Verizon actually plans over the next three years would result in a substantial understatement of the non-recurring costs Verizon actually will incur (because activities Verizon actually performs would not be necessary on a network using more advanced technology).[1442]

559.   Verizon's non-recurring cost study is designed to identify the costs of performing manual activities that are necessary to provide UNEs to competitive LECs. Verizon assumes that the company has forwarding-looking OSS in place, but it does not assume that all ordering

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[1436] Verizon Ex. 100, Vol. 11; AT&T/WorldCom Ex. 23, Vol. 2.

[1437] *See, e.g., Universal Service First Report and Order*, 12 FCC Rcd at 8912-16, para. 250; *see supra* section III(B).

[1438] Verizon Initial Cost Brief at 183.

[1439] Verizon Ex. 107, at 300.

[1440] *Id.* at 325-26.

[1441] *Id.* at 328-29.

[1442] *Id.* at 326-27.

and provisioning activity will be mechanized. Rather, Verizon assumes that orders must sometimes be handled manually, both due to competitive LEC error and because some activities will not occur with sufficient frequency to warrant mechanization.[1443] For example, Verizon assumes that all "complex" orders for six lines or more will continue to need manual attention, even in a forward-looking environment.[1444]

560.   Verizon's non-recurring cost study classifies costs into four categories: (1) *Service Order; (2) Central Office Wiring; (3) Provisioning;* and *(4) Field Installation.*[1445] For each non-recurring activity within these four categories, Verizon follows a multi-step process to estimate the "forward-looking labor time" for an activity, which is then multiplied by a labor rate to produce the NRC.[1446] Specifically, Verizon's time estimates for each activity are the product of three component factors that are estimated through three separate and largely independent processes.

561.   First, through a survey of its employees, Verizon estimated the average amount of work time required to perform these activities today.[1447] For the survey, Verizon divided non-recurring functions into a large number of individual steps ("activities") and asked each surveyed worker how long it took him on average to complete each activity.[1448] For each activity, Verizon calculated the average of the times reported by the survey respondents.

562.   Second, Verizon adjusted the average work times through a Typical Occurrence Factor, which was developed based on the frequency with which field managers expect those activities to be performed in the current environment.[1449] Verizon states that this factor was developed by Verizon managers experienced in supervising this work,[1450] but Verizon supplies

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[1443] *Id.* at 330-35.

[1444] *Id.* at 331.

[1445] *Id.* at 298.

[1446] *Id.* at 300.

[1447] *Id.* at 311.

[1448] Different methods were employed for two work groups. For TISOC (Telecom Industry Service Operations Center), which performs ordering functions, time estimates were based on a "time and motion study" performed by Verizon and validated by an outside contractor. *Id.* at 313-14 (as corrected by Verizon's motion dated Nov. 29, 2001). For loop assignment functions (performed by MLAC, Mechanized Loop Assignment Center), times were based on actual records of time and output. *Id.* at 315. The worker survey was the basis for all other time estimates, the vast majority of activities measured. *Id.* at 311-12.

[1449] *Id.* at 316.

[1450] *Id.*

few additional details on the procedures, criteria, or methods used to reach this estimate.[1451]

563. Third, Verizon applied a Forward-Looking Adjustment Factor designed to reflect system enhancements and efficiencies expected to develop during the non-recurring cost study period.[1452] This adjustment factor was developed by a panel of 15 Verizon "subject matter experts,"[1453] but again Verizon provides few details on criteria or procedures employed, other than that estimates would represent a consensus of the panel after discussion.[1454] After application of these adjustments, Verizon multiplied the time required for a particular activity by the labor rate for that activity to arrive at the cost for each activity. Each NRC is the sum of the costs of the activities required to perform it, with markups for common costs and an uncollectibles factor ("gross revenue loading").[1455]

b.   AT&T/WorldCom Model

564. The AT&T/WorldCom non-recurring cost model is similar to Verizon's in that it is based on time and frequency estimates and labor rates for the various activities for which costs will be recovered through NRCs. AT&T/WorldCom developed the anticipated time and frequency of each non-recurring activity using a panel of subject matter experts.[1456] Like Verizon, AT&T/WorldCom provide little detail regarding the process used by these experts in developing their estimates or the factual bases underlying the estimates.

565. AT&T/WorldCom assume a newly built, efficient network that is highly automated, constrained only by current wire center locations.[1457] The network AT&T/WorldCom assume in their non-recurring cost model is the same forward-looking network they use for purposes of calculating recurring charges.[1458] The AT&T/WorldCom model also makes a number of assumptions that limit the activities for which a NRC is imposed. For example, AT&T/WorldCom assume that a forward-looking network would have 100 percent dedicated

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[1451] A letter went to managers updating these estimates. *See* Verizon Ex. 100, Vol. XI, Part H, Section M. The letter does not reveal criteria or guidelines, however.

[1452] Verizon Ex. 107, at 316-17.

[1453] *Id.* at 317.

[1454] Verizon Ex. 100, Vol. XI, Part H, Section L. As Verizon notes, detailed instructions were provided "on the importance, purpose and intent of the analysis," but not on criteria or methodology, other than that forward-looking adjustments were to be based on consensus. Verizon Ex. 107, at 317.

[1455] *Id.* at 304.

[1456] AT&T/WorldCom Ex. 2 (Walsh Direct), at 29-30.

[1457] *Id.* at 13-14.

[1458] *Id.* at 30-31; AT&T/WorldCom Ex. 13 (NRC Panel Rebuttal), at 9-10.

inside plant (DIP) and 100 percent dedicated outside plant (DOP).[1459] As a result of these assumptions, AT&T/WorldCom include no NRC for central office wiring or for placing DCSs at the SAI.[1460]

566. AT&T/WorldCom assume that no manual processing is needed at the ordering stage and that any order that contains an error can be returned automatically to the competitive LEC without manual intervention.[1461] AT&T/WorldCom's non-recurring cost model assumes that Verizon's OSS are capable of operating at a two percent fallout rate at the provisioning stage.[1462] AT&T/WorldCom define fallout as orders where manual intervention is needed to fix an error made by a competitive LEC.[1463] AT&T/WorldCom also take the position that any costs resulting from errors in, or associated with correcting, Verizon's databases should not be borne solely by competing LECs.[1464] According to AT&T/WorldCom, these costs would be recovered in recurring charges (through ACFs), rather than in NRCs.[1465] AT&T/WorldCom assert that Verizon's current OSS is capable of performing at this level.[1466] Unlike Verizon, the AT&T/WorldCom non-recurring cost model assumes that a forward-looking network will make use of IDLC equipment and that IDLC loops can be unbundled.[1467]

2. Discussion

567. We find that AT&T/WorldCom's model is more consistent with the *Local Competition First Report and Order*, the Commission's rules, and the criteria adopted in the *Universal Service* proceeding. Thus, we adopt it for use in this arbitration to develop NRCs. One important criterion is that the model must build the most efficient network possible using currently available technology, constrained only by current switching locations.[1468] The AT&T/WorldCom model, which is based on the SM used by the Commission in calculating universal service support, clearly meets the TELRIC requirement of optimization constrained

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[1459] Tr. at 4664-67.

[1460] *Id.* at 4664, 4667.

[1461] AT&T/WorldCom Ex. 2, at 33.

[1462] *Id.* at 33-34.

[1463] *Id.* at 33.

[1464] *Id.* at 16-19.

[1465] *Id.*

[1466] *Id.* at 33; Tr. at 4939-40.

[1467] AT&T/WorldCom Ex. 2, at 34.

[1468] 47 C.F.R. § 51.505(b); *Universal Service First Report and Order*, 12 FCC Rcd at 8913, para. 250(1).

only by current switching locations.[1469] In contrast, Verizon's model is not based on an optimization constrained only by current switching locations. Rather, it is tied to existing processes and the existing network.[1470] Furthermore, it is not evident that the "forward-looking adjustment factors" proposed by Verizon are sufficient to bring the model within TELRIC standards. To the contrary, the ground rules for these adjustments seemed to preclude such adjustments, focusing only on expected improvements in performing a particular sub-task, not on the possibility of entirely new procedures based on an alternative, more efficient, currently available, technology.

568.   A major source of the difference in the network assumptions is the way in which the parties interpret the requirement to use currently available technology. Verizon takes the view that only the technology it expects to install in its network during the study period is "currently available,"[1471] and it goes so far as to exclude from its non-recurring cost model some equipment that it includes in its recurring cost model (specifically, IDLC equipment). AT&T/WorldCom take the opposite approach, interpreting "currently available" as any technology that is theoretically feasible, even if it has not actually been implemented by any carrier. Similarly, the parties disagree about the capabilities of "currently available" OSS.

569.   As a general matter, we conclude that AT&T/WorldCom's approach is more consistent with TELRIC requirements.[1472] We are not convinced by Verizon's argument that it is appropriate to use different network assumptions in calculating recurring and non-recurring costs. This approach almost certainly would result in over-recovery or under-recovery of costs.[1473] Furthermore, although Verizon is correct that AT&T/WorldCom's NRC study does not include certain types of costs, in most cases this exclusion is based on an assumption that the costs will be recovered in recurring charges, rather than an overly optimistic assumption about the capabilities of currently available technology.

570.   Another standard established by the Commission for evaluating cost models is that "underlying data must be verifiable, network design assumptions must be reasonable, and

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[1469] *Platform Order,* 13 FCC Rcd at 21335, 21361, paras. 26, 92.

[1470] Verizon Ex. 107, at 300.

[1471] *Id.* at 301.

[1472] However, as we discuss below with respect to unbundling of IDLC loops, it is not clear that all of the assumptions AT&T/WorldCom make reflect the use of currently available technology. *See infra* section X(C)(5).

[1473] Tr. at 4927-28 (discussing the relationship between labor and capital). Moreover, no state commission has explicitly endorsed Verizon's approach, Tr. at 4898, and a number of states have made clear the importance of using a consistent set of network assumptions. *See* AT&T/WorldCom Ex. 8 (Murray Direct), at 50-52; *see also Generic Investigation Re: Verizon Pennsylvania, Inc.'s Unbundled Network Element Rates,* Docket No. R-00016683, Tentative Order at 178 (Pennsylvania Commission Oct. 24, 2002) (*Pennsylvania Commission Pricing Decision*); *Massachusetts Commission Pricing Decision* at 429.

model outputs must be plausible."[1474] Both parties made underlying data, formulas, and mechanics of their models available, although the relative complexity of Verizon's model makes it more difficult to analyze. Both models are lacking, however, with respect to verifiability of the task time estimates they produce. Upon analysis, both parties' estimates are highly subjective.[1475]

571. For AT&T/WorldCom's model, the criteria and deliberations that produced the time estimates are undocumented and unverifiable.[1476] AT&T/WorldCom's time and frequency estimates are based solely on the subjective opinion of its subject matter experts. We have been provided with no objective evidence to support these estimates.

572. Although Verizon provides more support for its survey-based current average times, close examination of the survey process reveals numerous serious methodological errors and casts considerable doubt upon the meaningfulness of the results. We identify here a few of the more serious concerns with the survey results. First, the instructions to employees as to the purpose of the survey left no doubt that their responses would be used in adversarial UNE rate proceedings to determine charges to be imposed on Verizon's competitors.[1477] Given these instructions, it is reasonable to expect that Verizon's employees would feel encouraged to overestimate times for completing activities.

573. Second, Verizon calculates the time that the average respondent reported for a given activity, rather than the average time that the activity required.[1478] Verizon's approach is based on an implicit, and unreasonable, assumption that each respondent performed the activity the same number of times.[1479] It seems far more likely that respondents with relatively high activity times performed the activity less frequently than respondents with relatively low activity times.[1480] By failing to factor in the frequency with which respondents performed the relevant

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[1474] *Universal Service First Report and Order*, 12 FCC Rcd at 8915, para. 250(8).

[1475] Tr. at 4952 ("[I]n the end, the forward-looking costs of both studies are the process of subject matter expert opinions as to forward-looking costs in processes that seem to be documented in roughly a similar way.").

[1476] *Id.* at 4955-56 (conceding that AT&T/WorldCom produced no documentation on the bases for its time and frequency estimates).

[1477] These instructions begin as follows: "Bell Atlantic has been requested by its State Commissions to provide well documented cost studies supporting the non-recurring rates it plans to charge for provisioning Unbundled Network Elements (UNEs) and Retail products and services. These studies will support rates for ordering, provisioning, and installing all UNEs, products and services the Company is expected to provide." Verizon Ex. 100, Vol. XI, Part H, Section K.

[1478] Tr. at 4915.

[1479] Verizon states that it had no idea how frequently respondents performed the relevant task. *Id.* at 4706. The effect of not knowing, however, is to assume that each respondent performed the activity the same number of times.

[1480] A more plausible assumption than Verizon's would be that each respondent spent the same amount of time per week performing the activity (for example, 40 hours per week, or 1 hour per week). A sensitivity analysis (continued....)

task, there is a systematic bias toward higher estimates.[1481]

574. The validity of Verizon's results is further undermined by the extreme variations observed in the original survey data. For many individual activities, the maximum time reported is 50 or even 100 times the minimum observation, as parties with access to the proprietary survey data can easily confirm.[1482] This makes the methodological bias discussed in the previous paragraph all the more serious, because Verizon's methodology disproportionately exaggerates the impact of unusually large observations.

575. Third, the mechanics of Verizon's survey methodology tend to produce a "padded" estimate even before the averages are calculated. For each activity, the minimum time that could be reported was one minute. As a result, even a simple job that might require a total of 5 or 10 minutes would, if broken down into twenty steps, generate a minimum estimate of 20 minutes. Furthermore, many of these activities are performed sequentially, but doing any one activity in isolation would typically involve a considerable amount of getting started time that would not be required for each step in a multi-step procedure. Verizon's time estimates would be overstated to the extent respondents included this getting started time in their responses.

576. In addition to the problems with the survey itself, we have concerns about how the resulting time estimates are adjusted in the second and third steps of the process.[1483] Verizon's time estimates are adjusted by two factors (an "occurrence factor" and a "forward-looking adjustment factor"), but there is no documentation of the processes or criteria that

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performed by Bureau staff on the survey data showed that Verizon's implicit assumption substantially increases the estimated average time in every case. Of nine individual activities analyzed, Verizon's method at least doubled the estimate for a third and increased it by over 50 percent for another third, relative to this alternative assumption. Parties with access to the proprietary original survey data can easily confirm this effect by weighting each respondent's observation by the number of times the respondent could have performed the activity in a 40-hour period (or any other period) and computing the frequency-weighted average time. The point is not that this is the correct methodology, but rather that Verizon's implicit assumption generates a substantial upward bias relative to this more plausible assumption. This further weakens our confidence in Verizon's results.

[1481] This bias can be illustrated through a simple hypothetical. Suppose, for example, that only two technicians perform Task X, and that they spend all their time performing this task. One technician always works under favorable conditions and on average requires 12 minutes to perform the task. The second technician always performs under difficult conditions and on average requires 60 minutes to perform the task. Verizon's methodology would report an average task time of 36 minutes ((12 + 60) /2). But in an hour, the first worker would complete the task 5 times and the second worker would complete it once. The average task time, therefore, is 2 hours (120 minutes), divided by the 6 task completions, or 20 minutes per task.

[1482] This variation suggests that respondents did not have the same understanding of what was included in the activity, or that the activities were so poorly defined that they do not actually describe the same work activities. It may also have reflected observations from respondents who rarely perform the activity, and thus are not proficient at it. These and numerous similar possibilities suggest that the survey is not well designed.

[1483] These concerns regarding the adjustments to the time estimates apply not only to the estimates produced by the employee survey, but also to the estimates for activities performed by the TISOC and MLAC. *See supra* note 1448.

produced the two adjustment factors, other than that the latter was based on a consensus after discussion.[1484] As a result of the survey errors and biases, and the subjective nature of the subsequent adjustments, we have no more confidence in Verizon's time and frequency estimates than we do in those advocated by AT&T/WorldCom.

577. Another Commission-specified evaluation criterion is that a cost model "must include the capability to examine and modify the critical assumptions and engineering principles."[1485] Both models have some ability to modify at least some critical assumptions. It would be difficult to modify the engineering principles embedded in Verizon's model, however, because it is difficult to discover what they are. Indeed, Verizon provides little explanation of what many of its non-recurring activities actually involve, why they exist, or when they are necessary. In contrast, AT&T/WorldCom supplied a detailed and thorough "assumptions binder" that lays out the precise task being performed for each NRC, the activities and steps required to complete it, how it fits into the network design assumptions, and when it is necessary.[1486] AT&T/WorldCom's model is clearly superior as to the transparency and reviewability of its network design assumptions and procedures.

578. In summary, we have limited confidence in the time and frequency estimates contained in both models provided by the parties. We would have preferred the parties to have provided a great deal more information describing the relevant activities and explaining the basis for the time and frequency estimates. Notwithstanding these concerns, we must select one of the models as a starting point in developing NRCs because the information on the record provides an insufficient basis for us to develop time and frequency estimates independently.

579. As between the two models presented in this case, we conclude that the AT&T/WorldCom model is more consistent with the guidelines of the *Local Competition First Report and Order* and the criteria specified in the *Universal Service* proceeding. Specifically, in comparison to Verizon's model, AT&T/WorldCom's model is based on network assumptions that more closely follow TELRIC principles, it is more transparent with respect to the underlying design assumptions, and it is easier to adjust. A number of specific problems must be resolved, but the AT&T/WorldCom model appears the better choice for a starting point.

580. Our conclusions regarding the relative merits of the two models are confirmed by the experience of state commissions in Verizon's service territory over the last few years. Verizon has submitted variations of its NRC model based on the same survey and methodology in several state proceedings.[1487] Every state commission has recognized various significant

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[1484] Verizon Ex. 100, Vol. XI, Part H, Section L; Tr. at 4746 (conceding that there is no documentation of the basis for the adjustments).

[1485] *Universal Service First Report and Order*, 12 FCC Rcd at 8915, para. 250(9).

[1486] *See* AT&T/WorldCom Ex. 23, Vol. 2, Technical Assumptions Binder.

[1487] Verizon submitted the model in New York, Massachusetts, New Jersey, Delaware, and Washington, D.C. Verizon Ex. 107, at 302. In addition, essentially the same model was subsequently submitted in Pennsylvania, (continued....)

upward biases. In most states, Verizon's was the only model submitted on the record, and thus the state commission relied upon it, but made downward adjustments to offset observed biases.[1488] The AT&T/WorldCom model has been presented and fully supported only in more recent state proceedings and, in two of those cases, the state commission rejected Verizon's model completely in favor of AT&T/WorldCom's model.[1489]

C. Implementation Issues

1. Costs to be recovered by NRCs

a. Positions of the Parties

581. A major dispute between the parties is what costs should be recovered through NRCs, and what recovery mechanism, if any, should be available for costs not recovered through NRCs. Verizon defines non-recurring costs as costs associated with the one-time activities necessary to process and provision competitive LECs' requests for the initiation, change, or disconnection of service, or for other one-time activities.[1490] Verizon states that the most efficient means of recovering these costs is to charge them to the cost causer – the competitive LEC requesting the activity.[1491] Verizon states that it should be allowed to recover through NRCs all costs "incurred in response to a specific event [UNE order] initiated by a specific cost-causer."[1492] That is, any cost incurred in the course of provisioning a competitive LEC's order for a UNE should be recovered through a NRC. Verizon argues that its position is supported by the announcement in the *Local Competition First Report and Order* of a "general rule that costs

(Continued from previous page) ————————————————————
where the state commission issued a Tentative Decision on October 24, 2002. *See Pennsylvania Commission Pricing Decision* at 173-80.

[1488] *See, e.g., New York Commission Pricing Decision* at 141-43 (reducing fallout rate to 2 percent); *In Re: Review of Bell Atlantic Rhode Island TELRIC Study*, Docket No. 2681, Report and Order at 68 (R.hode Island Commission Nov. 18, 2001) (reducing work time estimates by 57 percent) (*Rhode Island Commission Pricing Decision*); *Massachusetts Commission Pricing Decision* at 457 (reducing work time estimates to the lower end of a 95 percent confidence interval); *In the Matter of the Board's Review of Unbundled Network Elements Rates, Terms and Conditions of Bell Atlantic-New Jersey, Inc.* Docket No. TO00060356, Order at 162-63 (New Jersey Commission Mar. 6, 2002) (revising or eliminating task times) (*New Jersey Commission Pricing Decision*).

[1489] *Pennsylvania Commission Pricing Decision* at 173, 178; *In the Matter of the Implementation of the District of Columbia Telecommunications Competition Act of 1996 and Implementation of the Telecommunications Act of 1996*, Docket No. 962-T-671, Opinion and Order at 150 (D.C. Commission Dec. 6, 2002) (*D.C. Commission Pricing Decision*). Although the AT&T/WorldCom model was introduced in an earlier proceeding in Massachusetts, the state commission stated that it did not consider this alternative model in its decision because its sponsors did not advocate it on final brief "except in the context of proposing specific modifications to Verizon's NRCM." *Massachusetts Commission Pricing Decision* at 403, n. 168.

[1490] Verizon Ex. 107, at 298.

[1491] *Id.*

[1492] *Id.*

should be recovered in a manner that reflects the way they are incurred."[1493] Verizon proposes a total of approximately 115 NRCs to recover the costs of these activities.

582.   AT&T/WorldCom offer a different approach to NRCs. They state that only costs of activities that solely benefit the competitive LEC ordering the UNE should be recovered through NRCs.[1494] Under this "reusability" test, if an activity need not be repeated in order to serve a subsequent UNE customer, then it also benefits these potential future customers and should be recovered through recurring charges.[1495] For example, one-time activities such as placing cross-connects at the FDI should be recovered through recurring charges because Verizon can reuse that connection for a subsequent customer (and these costs are recovered in recurring rates in Verizon's retail operations).[1496] In contrast, AT&T/WorldCom would allow NRCs to recover the cost of placing cross-connects at the MDF because this would benefit only the competitive LEC ordering the loop.[1497] AT&T/WorldCom propose a total of 49 NRCs, of which 18 are separately stated disconnection NRCs.

b.   Discussion

583.   We conclude that the approach advocated by AT&T/WorldCom more closely follows the TELRIC principles established by the Commission. Consequently, we will establish prices only for the activities identified in the AT&T/WorldCom model. Verizon misconstrues the citation from paragraph 745 of the *Local Competition First Report and Order,* which, in context, refers primarily to recovering costs of dedicated facilities through flat charges rather than usage-sensitive charges. The *Local Competition First Report and Order* specifically prohibits recovery of recurring costs through NRCs, but specifically permits recovery of non-recurring costs through recurring charges because of the potential barrier to entry posed by large NRCs.[1498]

584.   Verizon implicitly acknowledges that many of the costs at issue are currently recovered through recurring charges, *i.e.,* through ACFs, because it proposes to avoid double recovery by subtracting NRC revenues from the costs it uses to calculate ACFs.[1499] Verizon failed, however, to demonstrate that the NRC revenues it removes from the ACF calculation bear

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[1493] *Local Competition First Report and Order,* 11 FCC Rcd at 15874-75, para. 745.

[1494] AT&T/WorldCom Ex. 2, at 9-12.

[1495] *Id.* at 9-10; AT&T/WorldCom Ex. 8, at 29-31.

[1496] AT&T/WorldCom Ex. 8, at 31; Tr. at 4667-68.

[1497] Tr. at 4892.

[1498] *Local Competition First Report and Order,* 11 FCC Rcd 15874-75, para. 745.

[1499] As we explain in more detail in the discussion of ACFs, we do not require Verizon to make its proposed adjustment given the approach to NRCs that we adopt in this section. *See supra* section III(E)(3)(c).

any relationship to the costs of the activities for which it seeks to impose NRCs in this case. Accordingly, there is a significant likelihood that there is a mismatch between the costs recovered through NRCs and the costs not recovered through ACFs. AT&T/WorldCom's approach, which recovers more costs through recurring charges, diminishes the problems associated with attempting to match the costs recovered through NRCs and the costs excluded from the ACF calculations. For this reason, we conclude that the better approach is to recover these costs through ACFs and not through NRCs unless the activity provides no benefit to any future user of the same facility or if the cost of the activity is not reflected in the ACF calculations.

2.   Manual installation activities

a.   Positions of the Parties

585.   The AT&T/WorldCom model assumes that each loop is fully connected from the end-user all the way into the central office and that no additional outside plant or inside plant is needed to provision the loop to a competitive LEC.[1500] As a result of this assumption of 100 percent DIP and 100 percent DOP, the AT&T/WorldCom model does not develop NRCs for moves or rearrangements that may be needed at the central office or the FDI.[1501] According to AT&T/WorldCom, costs for this type of work are recovered either as a capital expense (part of constructing a loop) or a maintenance expense ("rearrangements"). AT&T/WorldCom argue that these costs are presently recovered through recurring charges, as demonstrated by the fact that Verizon proposes to avoid double recovery by subtracting NRC revenues from the costs that produce ACFs.[1502] AT&T/WorldCom also demonstrate that Verizon recovers similar costs related to other parts of the loop (*e.g.*, the NID, the drop) through recurring charges.[1503]

586.   Verizon argues that the costs of every activity undertaken pursuant to a competitive LEC UNE order should be recovered through a NRC, including rearrangements in the central office or field dispatches for rearrangements at the FDI.[1504] Verizon proposes a substantial Field Installation surcharge (approximately $100 for most UNEs) "when necessary to complete the service order or when requested by the competitive LEC."[1505] This charge would apply only when the relevant activities actually are necessary to complete an order, and therefore competitive LECs generally will not know at the time they order a UNE whether or not these surcharges apply. Verizon states that no incumbent LEC employs AT&T/WorldCom's assumed

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[1500]   AT&T/WorldCom Ex. 2, at 23.

[1501]   AT&T/WorldCom Ex. 8, at 31.

[1502]   AT&T/WorldCom Ex. 2, at 24-25.

[1503]   Tr. at 4800-02.

[1504]   Verizon Ex. 107, at 301-02.

[1505]   Verizon Ex. 124 (NRC Panel Surrebuttal), at 96; Tr. at 4795.

100 percent DIP and DOP.[1506] Verizon would avoid double recovery by subtracting NRC revenues (as a proxy for non-recurring costs) from the costs used to calculate ACFs.[1507]

b. Discussion

587. We find that AT&T/WorldCom's assumption of 100 percent DIP and DOP is reasonable. Not only is this a surer method of avoiding double recovery, but it also seems to conform to the retail practice of recovering these costs through recurring charges. In addition, it furthers the policy objective of minimizing barriers to entry. Verizon's critique of AT&T/WorldCom's assumption of 100 percent DIP and DOP misconstrues AT&T/WorldCom's model. As AT&T/WorldCom explained, the assumption of 100 percent DIP and DOP is a modeling convention that is designed to reflect that these costs are recovered in the recurring cost study, not an assumption that any real network would be built this way. This assumption does not prevent Verizon from recovering any costs because AT&T/WorldCom provide for recovery of these costs through ACFs, just like all other loop maintenance expenses.

588. For similar reasons, we agree with AT&T/WorldCom that Verizon's proposed surcharge should not be permitted. These costs are more appropriately recovered through ACFs, which apparently is how Verizon recovers them today, as demonstrated by its proposal to back out these amounts from its ACF calculations. Recovery through recurring charges avoids the problem of knowing how much to reduce ACFs to avoid double recovery and reduces the risk of high NRCs creating an artificial barrier to entry. This approach also is more consistent with the pro-competitive policy goals of the 1996 Act.[1508]

3. Manual processing activities

a. Positions of the Parties

589. The AT&T/WorldCom model assumes that no manual intervention is needed at the time an order is placed and that there will be a two percent fallout rate at the provisioning stage.[1509] That is, the model assumes that orders placed by competitive LECs are either accepted electronically or rejected electronically and that, once accepted, only two percent of orders will require manual intervention by Verizon due to some error *caused by the competitive LEC*.[1510] AT&T/WorldCom argue that competitive LECs should not have to pay in NRCs the cost of manual processing that is attributable to errors in Verizon's databases or other network

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[1506] Verizon Ex. 116, at 39-45.

[1507] Verizon Ex. 107, at 321-22.

[1508] *Local Competition First Report and Order*, 11 FCC Rcd at 15875-76, paras. 749-751.

[1509] AT&T/WorldCom Ex. 2, at 33.

[1510] *Id.* at 33-34.

defects.[1511] AT&T/WorldCom state that recurring charges recover network maintenance and repair costs, including database synchronization, and these costs do not belong in NRCs.[1512] For similar reasons, the AT&T/WorldCom model largely omits design time in calculating NRCs. AT&T/WorldCom argue that these costs generally should be included in the recurring cost study.[1513] In the model's Technical Assumptions Binder, however, AT&T/WorldCom seem to acknowledge that design time is necessary for provisioning some UNEs.[1514]

590.   Verizon argues that the assumptions in the AT&T/WorldCom model are unrealistic. Verizon states that some orders are simply too complex to be processed electronically, such as orders for more than five new POTS loops at a single location.[1515] Verizon also argues that no incumbent LEC has ever achieved a two percent fallout rate.[1516] Verizon proposes a four percent fallout rate in its model, which it states is very ambitious.[1517] Verizon argues that even when fallout is due to errors in Verizon databases or other network defects, the competitive LEC is the 'cost-causer' because the defect would not have caused a problem if not for the order.[1518] In such cases, manual handling is necessary and should be recovered in a NRC. Verizon states that maintenance expenses recovered through ACFs reflect different processes than correcting errors that are revealed in the course of provisioning a competitive LEC order.[1519]

591.   Furthermore, Verizon states that some "fallout" is and should be manual processing by design because it is not cost-effective to automate complex orders.[1520] Verizon contends that AT&T/WorldCom's model includes "design time" only for the two percent of orders that require manual intervention, even though some UNEs inherently require manual design 100 percent of the time, such as 4-wire loops, DS1 loops, designed transport, and digital

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[1511]   *Id.* at 16-17.

[1512]   *Id.*

[1513]   *See, e.g.,* AT&T/WorldCom Ex. 21 (NRC Panel Surrebuttal), at 39-42 (discussing costs associated with DS1 and DS3 interoffice transport).

[1514]   *See, e.g.,* AT&T/WorldCom Ex. 23, Vol. 2, Technical Assumptions Binder at 37 ("The exception to non-designed loops is the 4-wire loop (analog or digital) which by its very nature constitutes a designed service/circuit.").

[1515]   Verizon Ex. 116, at 10.

[1516]   *Id.* at 14-17.

[1517]   *Id.* at 15.

[1518]   *Id.* at 69.

[1519]   Verizon Ex. 124, at 99-100.

[1520]   Verizon Ex. 116, at 10, 25-26.

designed loops.[1521] Verizon argues that no automated system exists that can perform such designs and that developing such systems would be extremely expensive for rather rarely performed functions.[1522] Finally, Verizon proposes a Manual Surcharge (approximately $20.00 for most UNEs) that is imposed whenever a competitive LEC requests that an order be handled manually.[1523]

b. Discussion

592. We find that the two percent fallout rate used in the AT&T/WorldCom model is consistent with TELRIC requirements. We note that several state commissions have adopted this position.[1524] We also find that it is reasonable to assume, as AT&T/WorldCom do, that competitive LEC orders that have errors are returned electronically to the competitive LEC and resubmitted and that manual intervention by Verizon at the ordering stage should be unnecessary. We do not agree with Verizon that competitive LECs should pay NRCs that reflect manual handling of all orders for six or more lines. As noted by AT&T/WorldCom, this policy appears to be a "workaround" designed to deal with the possibility that Verizon's OSS cannot reliably determine the available facilities for a given location.[1525] We also disagree with Verizon that costs associated with database errors are appropriately recovered from competitive LECs through NRCs. Database maintenance is a recurring cost that should be recovered in recurring charges through ACFs, and not through a NRC.[1526] Allowing Verizon to impose NRCs on competitive LECs to correct database errors provides no incentive to Verizon to avoid such errors.

593. We agree with Verizon, however, that a number of the UNEs at issue are inherently "custom-designed" elements and that AT&T/WorldCom do not appear to allow for necessary design time. Accordingly, for the elements AT&T/WorldCom have identified as designed elements, some sort of adjustment is necessary.[1527] There is, however, little record evidence on which to determine an adjustment to AT&T/WorldCom's model. We require both

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[1521] *Id.* at 25-26; *see* AT&T/WorldCom Ex. 23, Vol. 2, at 83, 104, 130, 137.

[1522] Verizon Ex. 116, at 10, 14.

[1523] Verizon Ex. 100, Vol. 11, Non-Recurring Costs Summary.

[1524] Commissions in numerous states inside and outside the Verizon service territory have found the two percent fallout rate appropriate. *See, e.g., Massachusetts Commission Pricing Decision* at 483; *New York Commission Pricing Decision* at 143; *Pennsylvania Commission Pricing Decision* at 178; *Investigation of the Southern New England Telephone Company's (SNET) Proposed Unbundled Network Elements (UNE) Non-Recurring Charges (NRCs)*, Docket No. 98-09-01, Decision at 34 (Connecticut Commission Jan. 5, 2000).

[1525] AT&T/WorldCom Ex. 21, at 21.

[1526] At least one Verizon witness conceded as much. Tr. at 4909 ("Database maintenance is essentially a recurring activity, and it is [in] recurring rates.").

[1527] These elements include 4-wire loops, DS1 loops, DS3 loops, and interoffice transport.

parties to negotiate further on this point in light of the issues decided in the arbitration order. If the parties are unable to reach a negotiated agreement, they may seek further arbitration of this issue. Until such time as the NRC for these elements is adjusted to include design time, we direct Verizon to provide any necessary design services subject to true-up.[1528]

4. Disconnection costs

a. Positions of the Parties

594. Verizon's proposed NRCs include both connection costs and an amount equal to the costs of disconnecting service.[1529] Verizon estimates the cost of eventual disconnection and discounts it to present value assuming a 2.5-year life for every UNE.[1530] Verizon argues that it should not bear the risk of non-collection and that combining connect and disconnect charges is a standard practice in the telecommunications industry that allows Verizon to recover disconnect costs from the cost causer.

595. The AT&T/WorldCom model proposes separate disconnection NRCs. AT&T/WorldCom state that collecting disconnection costs at the time service is installed, as Verizon proposes, unnecessarily raises entry costs and discriminates against competitive LECs that provide superior service and thus keep their customers longer than average.[1531] They argue that an incumbent LEC's risk of non-collection from a competitive LEC is much lower than from a retail customer and that disconnection is not always necessary.[1532] For example, if Verizon wins back the end-user customer, the UNE may remain unchanged. Furthermore, they argue, if the UNE involves a retail customer that migrated from Verizon, the retail customer already paid for disconnection in the installation charge, and charging the competitive LEC again would constitute double recovery.[1533]

b. Discussion

596. We agree with AT&T/WorldCom that disconnect costs, if any, should be recovered at the time of disconnection. Verizon has acknowledged that when a customer terminates service it generally leaves the facility in place so that it can be used by a subsequent

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[1528] The true-up will occur once NRCs for these designed elements are established through negotiation or arbitration, and will be calculated for the period beginning on the date the rates in this order become effective.

[1529] Verizon Ex. 107, at 335-36.

[1530] *Id.* at 335.

[1531] AT&T/WorldCom Ex. 13, at 71.

[1532] *Id.* at 71-73

[1533] *Id.* at 72-73.

customer.[1534] In many cases, there is no real cost associated with disconnection because the end-user merely switches LECs, but continues to be served over the same network elements with minimal or no change in provisioning. If another LEC wins the customer, either Verizon or another competitive LEC, the installation NRC will in most cases cover any costs of connecting the UNE to the new LEC's facilities.[1535]

597.   Collecting disconnection charges at the time of installation unnecessarily raises entry costs in contravention of the Act's goals of promoting competition. Moreover, the calculation of the disconnect cost is more complicated and more prone to error when that cost is recovered at the time of installation. Specifically, calculating the appropriate charge requires an assumption as to how long the competitive LEC will retain a customer, so that the future disconnection cost can be discounted to its present value. In this case, Verizon assumed that the average customer will stay with a competitive LEC for 2.5 years,[1536] but it provides no evidence to support this figure.

598.   We also disagree with Verizon that recovering disconnect costs at the time of installation is appropriate because it may be too difficult to collect from a competitive LEC once service is disconnected. We note that the risk of non-collection only exists if the competitive LEC exits the market. In such cases, Verizon's "uncollectibles" markup to its UNE prices is a better way of addressing these costs.

5.   Unbundling of IDLC Loops

a.   Positions of the Parties

599.   The AT&T/WorldCom model assumes that IDLC loops should be unbundled electronically from the central office by rolling the end-user's loop onto a "virtual DS1" that runs from the RT to a competitive LEC switch.[1537] The total cost for this unbundling, according to AT&T/WorldCom, is $0.26, although the competitive LEC would also have to buy a "virtual DS1," which is not currently a UNE, and incur a NRC of $19.20 to serve one to 24 unbundled loops.[1538]

600.   In the Verizon model, IDLC loops are unbundled by moving an IDLC customer to copper or UDLC, then running jumpers to the MDF and then to the competitive LEC's

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[1534] Tr. at 4831-33.

[1535] For example, suppose WorldCom wins an AT&T end-user served over a UNE-Loop. It seems unlikely that the costs of rearranging an MDF jumper from AT&T's to WorldCom's collocation facilities would be substantially different than for a rearrangement from Verizon to WorldCom.

[1536] Verizon Ex. 107, at 335.

[1537] AT&T/WorldCom Ex. 2, at 32; AT&T/WorldCom Ex. 23, Vol. 2, Technical Assumptions Binder, at 98-99.

[1538] AT&T/WorldCom Ex. 23, Vol. 2, Price List.

collocation facilities.[1539] Adding the Field Installation surcharge that applies to all unbundling jobs,[1540] Verizon's proposed total NRC for this unbundling is $260.27.[1541] Verizon contends that AT&T/WorldCom's proposal is not based on "currently available technology" and would involve a newly defined UNE (virtual DS1 from the RT to the competitive LEC switch).[1542]

b. Discussion

601. It is not necessary for us to decide whether AT&T/WorldCom's proposal for unbundling IDLC loops is feasible using current technology. The non-cost portion of this proceeding established a method by which we can decide the appropriate NRC without resolving the question of precisely how to unbundle an IDLC loop. Specifically, Verizon offered not to charge a competitive LEC more for unbundling an IDLC loop than for a copper or UDLC loop in situations where a spare facility is available.[1543] Consequently, we will assume for the purposes of calculating the loop unbundling charge that all loops are copper or UDLC. This would produce a somewhat higher NRC than proposed by AT&T/WorldCom, but one still quite lower than that proposed by Verizon.

6. Migrations (Hot Cuts)

a. Positions of the Parties

602. AT&T/WorldCom propose a simple process for moving a loop from a Verizon switch to a competitive LEC switch. According to AT&T/WorldCom, there are two key steps in transferring a loop. The first step, which may be completed any time before the cutover, consists of placing a new wire from the frame to the competitive LEC's equipment.[1544] The second step, which occurs at the negotiated due date and time, is for the Verizon switch to send a translation message deactivating service, and for the CLEC switch to send a message activating the new service.[1545] AT&T/WorldCom state that this simple process is adequate and that the additional

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[1539] Verizon Ex. 116, at 49. The charge for this activity is $159.48. *See* Verizon Ex. 100, Vol. 11, Non-Recurring Costs Summary.

[1540] Verizon Ex. 124, at 96.

[1541] The Field Installation Surcharge is $100.79. Verizon Ex. 100, Vol. 11, Non-Recurring Costs Summary.

[1542] Verizon Ex. 116, at 46-47.

[1543] *See Non-Cost Arbitration Order*, 17 FCC Rcd at 27274, 27317, 27319, paras. 478, 574, 578. This offer is reflected in the agreements between the parties. *See, e.g.*, Agreement between MCIMetro Access Transmission Services, Inc. and Verizon Virginia, Inc., § 3.18 (filed Sept. 3, 2002).

[1544] AT&T/WorldCom Ex. 13, at 65.

[1545] *Id.*

steps added by Verizon increase the risk of problems.[1546]

603.   In contrast, Verizon outlines a labor intensive, complex process that it claims is necessary to prevent end-user service interruptions.[1547] It states that, without these safeguards, "hot cuts" would have caused service interruptions for 11 percent of transferred end-users during a recent month.[1548] Verizon contends that AT&T/WorldCom's proposed simple method is untenable because the processes involved in a hot cut are so complicated that human intervention is necessary to ensure completion of the job without interrupting service to the customer.[1549] Verizon also argues that AT&T/WorldCom's contention that Verizon's processes are too complicated is "hypocrisy of the highest order" because most of the processes were requested by AT&T/WorldCom or other competitive LECs.[1550]

b.   Discussion

604.   Based on the record before us, we adopt AT&T/WorldCom's hot cut proposal. We agree with AT&T/WorldCom that the process set forth in their model is sufficient in most cases.[1551] With an efficient OSS in place, there should be limited need for the types of manual coordination activities that Verizon claims are necessary. Our decision to establish the hot cut NRC based on this highly automated process is not in any way intended to prevent competitive LECs from negotiating for (and paying for) a process that includes more manual intervention by Verizon to reduce the risk of error caused by either party.

XI.   BROADBAND ISSUES

A.   Loop Qualification

1.   Introduction

605.   Wireline broadband services include services that use xDSL to send signals over

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[1546] *Id.* at 34 ("Verizon's process is far more labor intensive, shifts control to a department that is unequipped to discover such problems, and disrupts the efficient work activities that would be available with existing OSS.").

[1547] Verizon Ex. 116, at 23-24 ("These work steps include arranging for the necessary resources to perform work at the Verizon frame (which includes cross-connects and dial-tone checks), the RCMAC work (switch translations), and a technician dispatch if necessary, as well as coordinating the timing of these steps. The RCCC also notifies the CLEC when these tasks are completed and then, after getting the 'go ahead' from the CLEC, coordinates the precise timing for cutting service over to the CLEC.").

[1548] Verizon Ex. 124, at 76.

[1549] *Id.* at 82.

[1550] *Id.* at 80.

[1551] As noted above, this NRC is not appropriate for designed elements, including 4-wire loops, DS1 loops, DS3 loops, and interoffice transport.

copper wires to packet switches.[1552] Loop Qualification is the process of ascertaining loop characteristics such as metallic length and the presence of such impediments to xDSL transmission as load coils, bridged taps, and "disturbers" such as T-1 lines. LECs use these characteristics to determine which, if any, xDSL services they will offer on a particular loop and also what line conditioning might be required to enable various types of xDSL service. Loop qualification may be a simple matter of consulting a database, but it also may require additional research, depending on how much and what type of information is needed.

606. The simplest method of loop qualification is to access the Loop Facility Assignment and Control System (LFACS). This database is now available to competitive LECs electronically at no additional cost[1553] and, in theory, contains extensive data about loop characteristics. The competitive LECs argue that, if LFACS were fully and accurately populated, it would suffice for the vast majority of their loop qualification requirements.[1554] Verizon does not directly contest this claim, but it notes that LFACS was designed before xDSL was developed, for other purposes.[1555] As a result, LFACS is neither fully populated nor entirely accurate. Thus LFACS is frequently inadequate for qualification purposes.

607. Verizon proposes three methods of loop qualification in addition to LFACS. First, it developed a Mechanized Loop Qualification (MLQ) Database, which contains additional loop information, and for which it proposes a recurring charge. If more detailed information is required for a particular loop, Verizon proposes that a competitive LEC can order Manual Loop Qualification or, for even more detail, an Engineering Query, with associated NRCs for review of paper cable plats.[1556] The competitive LECs oppose these charges.

[1552] The small "x" before the letters DSL signifies DSL as a generic transmission technology, rather than a particular form of DSL.

[1553] According to Verizon:

> A requesting CLEC also can electronically request and receive certain qualification information contained in Verizon VA's Loop Facility Assignment and Control System (LFACS) database. In fact, in October 2001, Verizon implemented an enhancement to its OSS that provides CLECs with electronic access to loop make-up information (including cable segment lengths and gauges, bridged tap lengths, gauges and locations, load coil locations, and DLC system types) as that information currently exists in the LFACS database. Verizon VA is not proposing any charge for such access at this time.

Verizon Initial Cost Brief at 209 n.228 (citing Verizon Ex. 116, at 55; Verizon Ex. 124, at 149-50).

[1554] *See* AT&T/WorldCom Ex. 13, at 158.

[1555] Verizon Ex. 124, at 147-48.

[1556] *See* Verizon Ex. 107, at 126; Verizon Ex. 124, at 144.

2. Positions of the Parties

608. Verizon views its MLQ Database, which it has developed over the past several years, as the "primary means by which CLECs obtain loop qualification information" and asserts that "[a] CLEC that seeks to offer xDSL-based services should be able to get all of the qualification information it needs from the Database."[1557] The Database indicates whether the loop is qualified for xDSL by Verizon's standards, meaning that "the total loop length, including any bridged tap, is less than 18,000 feet, the loop is not served by DLC, and T-1 is absent from the loop's binder group."[1558] The data are actually organized by terminal and indicate whether any available loops in the terminal in question are xDSL qualified. If a qualified loop is available in the terminal, the competitive LEC can order xDSL-compatible loops (that is, Verizon can transfer the distribution subloop to make an xDSL-compatible loop).[1559] The Database does not necessarily contain all information that may be relevant to all forms of xDSL that a competitive LEC may wish to offer.[1560] Verizon argues, however, that "the functionality built into its loop qualification database is more than sufficient for the vast majority of xDSL services. The need for [additional] loop make-up detail should be confined to very, very few cases."[1561] Development of this database involves systematic testing using a Mechanized Loop Test (MLT)[1562] on a sample of loops from each terminal.[1563] To recover the related costs, Verizon proposes to assess a recurring charge ($0.26 per month) on all xDSL-capable loops (used by Verizon or by competitive LECs) and line sharing and line splitting arrangements ordered by competitive LECs.[1564] Verizon proposes to amortize these costs over a 30-month period, which it asserts represents the "average 'service life' for a customer's use of a retail xDSL-based service."[1565]

609. As noted, Verizon also proposes NRCs for a Manual Loop Qualification and an

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[1557] Verizon Ex. 107, at 127.

[1558] *Id.* at 128-29; *see also id.* at 131.

[1559] *See id.* at 129.

[1560] *See id.* at 131; Verizon Ex. 124, at 145-46; AT&T/WorldCom Ex. 13, at 159-60.

[1561] Verizon Ex. 124, at 148.

[1562] "An MLT test determines the effective length (including any bridged tap and customer and CO wiring) of a loop by measuring its capacitance. The process involves sending a voltage pulse from testing equipment located in an MLT test center, through a central office switch port, and through the loop being tested. Only working loops, *i.e.*, loops connected to a switch port and provided with dial tone, can be MLT-tested." Verizon Ex. 107, at 128 n.23.

[1563] *Id.* at 129.

[1564] AT&T/WorldCom Ex. 13, at 156; Verizon Ex. 107, at 132-33.

[1565] Verizon Ex. 107, at 134.

Engineering Query. A Manual Loop Qualification consists of an examination of paper cable plats by an engineering clerk, to obtain more detailed information about a loop than exists in LFACS or in Verizon's new MLQ Database.[1566] Specifically, the clerk reviews plats for the presence or absence of both load coils and DLC. The clerk also computes the total loop length, including bridged taps. These characteristics largely determine which, if any, types of xDSL the LEC will offer over the loop (and the quality of service likely to result).[1567] The Engineering Query process provides a competitive LEC with additional loop makeup information, including the location and length of bridged taps, the number and location of load coils (if any), the length and gauge of cable segments, the location of the DLC RT and the type of DLC (if present), and the presence of potential T-1 disturbance.[1568] Verizon describes this as "an incremental step beyond that of the Manual Loop Qualification."[1569]

610. Verizon asserts that it is not required to provide this detailed information through a mechanized (electronic) process.[1570] Rather than incur the substantial costs of creating such a database, Verizon finds it appropriate that "the costs of paper-record review are imposed in a cost-causative manner only on those CLECs whose services require the additional information."[1571]

611. AT&T/WorldCom claim they are not requesting that Verizon create a "massive and costly" database.[1572] They argue that the relevant data for loop qualification should already exist in Verizon's databases:

> Incumbents installed loop inventory management databases such as LFACS, in different forms, over 20 years ago. ... [T]he databases contain at least some loop makeup information on each and every loop. Although the incumbents did not fully populate these databases with all the categories of loop makeup data at their inception, it has long been standard within the industry that all plant changes should be input to the databases on a going forward basis. The incumbents' engineering personnel were supposed to enter the modified loop makeup of existing plant into the database any time the plant was altered. ... [T]he necessary loop makeup data for virtually all of the [sic] Verizon's plant should

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[1566] *See id.* at 137; Verizon Ex. 116, at 55 n.21. The charge would not be assessed on loops in wire centers in which the MLT testing has not been completed. Verizon Ex. 124, at 153.

[1567] Verizon Ex. 107, at 137.

[1568] *Id.* at 137.

[1569] *Id.*

[1570] *Id.* at 132.

[1571] *Id.* at 131.

[1572] AT&T/WorldCom Ex. 21, at 61 (quoting Verizon Ex. 116, at 54).